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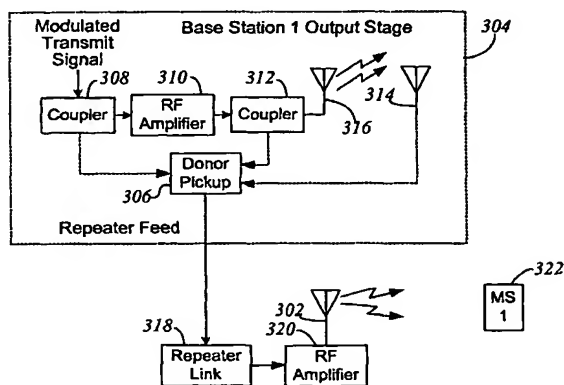
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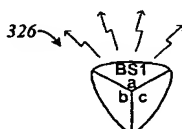
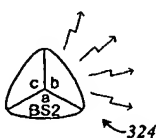
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[Continued on next page]

(54) Title: METHOD AND APPARATUS FOR DETERMINING REPEATER USE IN WIRELESS COMMUNICATIONS



(57) Abstract: A method and apparatus for determining whether a received signal is transmitted via a repeater is described. A source signal to be conveyed via a particular repeater may include, or be modified to include, a variety of signal characteristics having a predictable relationship that remains relatively constant, which may be taken together as a signature of the repeater. The signature may reflect a composite of distinct signals. A database of repeater signature references may be developed, and an adequate match between characteristics of an unknown received signal and such signature references indicates that at least part of the unknown signal is transmitted via a repeater. Useful signal characteristics for repeater signatures may include some representative of signal strength, and time of arrival information, among many other possibilities.





GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK,  
TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,  
ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

**Declarations under Rule 4.17:**

- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for all designations*
- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations*

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*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

## INTERNATIONAL SEARCH REPORT

International Application No

US2004/011816

A. CLASSIFICATION OF SUBJECT MATTER  
IPC 7 H04B7/26 H04Q7/38

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 H04B H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ, INSPEC

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X A	WO 02/087275 A (QUALCOMM INC) 31 October 2002 (2002-10-31) abstract  paragraph [1020] paragraph [1022] paragraphs [1043], [1044] paragraph [1059] figure 3  -----	1,2,8,12  3-7, 9-11,13, 14

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

## \* Special categories of cited documents :

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search

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# INTERNATIONAL SEARCH REPORT

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Patent document cited in search report		Publication date	Patent family member(s)	Publication date
WO 02087275	A	31-10-2002	US 2003008663 A1	09-01-2003
			US 2003008664 A1	09-01-2003
			CA 2445021 A1	31-10-2002
			EP 1382217 A2	21-01-2004
			JP 2004532576 T	21-10-2004
			NO 20034734 A	04-12-2003
			WO 02087275 A2	31-10-2002
			US 2003008669 A1	09-01-2003
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**Box II Observations where certain claims were found unsearchable (Continuation of Item 2 of first sheet)**

This International Search Report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:  
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:  
because they relate to parts of the International Application that do not comply with the prescribed requirements to such an extent that no meaningful International Search can be carried out, specifically:
3. ☐ Claims Nos.:  
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

**Box III Observations where unity of invention is lacking (Continuation of Item 3 of first sheet)**

This International Searching Authority found multiple inventions in this international application, as follows:

see additional sheet

1. ☐ As all required additional search fees were timely paid by the applicant, this International Search Report covers all searchable claims.
2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this International Search Report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this International Search Report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

1-14

**Remark on Protest**

- ☐ The additional search fees were accompanied by the applicant's protest.
- ☐ No protest accompanied the payment of additional search fees.

FURTHER INFORMATION CONTINUED FROM PCT/ISA/ 210

This International Searching Authority found multiple (groups of) inventions in this international application, as follows:

1. claims: 1-14

Method and apparatus for determining that a signal arrived  
at a receiver via a repeater  
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2. claims: 15-27

Method and apparatus for creating a database having  
predetermined patterns  
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3. claims: 28-40

Method and apparatus for generating a composite signal to be  
transmitted by a repeater  
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